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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/424,500	02/22/2000	AKIRA SATO	104788	8062

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EXAMINER

LEE, GRANVILL D

ART UNIT

PAPER NUMBER

2825

DATE MAILED: 11/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/424,500

Applicant(s)

SATO, AKIRA

Examiner

Granvill D Lee, Jr

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12-30 is/are rejected.
- 7) ☒ Claim(s) 11 and 24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.


Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☒ Interview Summary (PTO-413) Paper No(s). 
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

The amendment filed on 9/27/02 has been received and acknowledged to be found unpersuasive in view of the prior art of record, which includes cancellation of claims 10, 19, 23 and 28.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-7, 15-17 and 20-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Japan. Doc. 09076282.

In view of these claims (esp. 1, 15 and 29), Japan. Doc. '282 discloses a method of manufacturing a semiconductor device comprising:
placing a semiconductor assembly in which a semiconductor chip is secured to a die pad of a lead frame (Fig. 3 #2) in a cavity of a mold (Fig. 4 #9); applying a pressure to the semiconductor assembly by at least one support pin (Fig. 3 #10-12) so as to cause a stress in the lead frame; sealing the semiconductor assembly with a resin injected into the cavity from a resin injection port of the mold, the pressure applied by the at least one support pin preventing the semiconductor assembly from being lifted up or down by the resin (Abstr.) when the resin is injected into the cavity: and pulling the support pin from the cavity into the mold (Abstr.) before the resin is cured to release the semiconductor assembly from the pressure applied by the support pin.

In view of claim 2, Japan. Doc. '282 teaches a semiconductor device, wherein the support pin is caused to come in contact with the die pad of the semiconductor assembly.

In view of claim 3, Japan. Doc. '282 teaches a semiconductor package device where a plurality of the support pins (Fig. 3 #10-12) are arranged substantially on the axis of the resin injection port (#9).

In view of claims 4 and 16, Japan. Doc. '282 teaches a semiconductor package wherein a plurality of the support pins (Fig. 3 #10-12) are arranged substantially on the axis of the resin injection port.

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In view of claim 5, a semiconductor device made wherein the semiconductor assembly is pushed by the support pin in a direction away from the previous position of the contact portion of a support pin (Abstr.)

In view of claim 6, Japan. Doc. '282 discloses a semiconductor package wherein the semiconductor assembly is placed in the cavity with the die pad provided on the lower side (Fig. 3 #7).

In view of claim 7, Japan. Doc. '282 teaches that a semiconductor assembly is placed in the cavity with the die pad provided on the lower side (Fig. 3 #7).

In view of claims 17 and 20-21, Japan. Doc. '282 teaches a semiconductor package device shows a mold consisting of an upper and lower mold which together form a cavity, with support pins in the upper and lower portion of the mold (Fig. 3 #5 & #6).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan. Doc. 09076282.

In view of these claims, Japan. Doc. '282 discloses a method of manufacturing a semiconductor device by placing a semiconductor assembly in which a semiconductor chip is secured to a die pad of a lead frame in a cavity of a mold by applying a pressure to the semiconductor assembly by at least one support pin. However Japan. Doc. '282 fails to explicitly state that an actuator or servomotor is used in the insertion process of placing the pins through the mold to secure the die pad. However, using an actuator or servomotor is known in the art for the reciprocating movement of articles. Especially in certain automated processes, where inserting pins is required, actuators or servomotors are notoriously well known as a means to move articles in an effective means of which the examiner takes official notice, therefore it would have been obvious to one of ordinary skill in the art to apply an actuator to the process.

Claims 8-9, 12, 14, 18, 22, 27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan. Doc. 09076282 in view of Japan. Doc. 06177268.

In view of these claims (esp. clms. 12 & 30) Japan. Doc. '282 discloses a method of manufacturing a semiconductor device by placing a semiconductor assembly in which a semiconductor chip is secured to a die pad of a lead frame in a cavity of a mold by applying a pressure to the semiconductor assembly by at least one support pin. Japan. Doc. '282 further discloses a semiconductor package wherein the semiconductor assembly is placed in the cavity with the

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die pad provided on the lower side. However, JP. Doc. '282 fails to teach a semiconductor assembly placed in the cavity with the die pad on the upper side. Japan. Doc. '268 teaches that an assembly can be placed in a cavity with the die pad on the upper or lower side (Fig. 4 #b & #c).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the teachings of Japan. Doc. '282 with those of Japan. Doc. '268 with hopes of achieving versatile design. In viewing the figures that are contained in Doc. '268, some operations are performed with the die in the upper position. This gives added versatility, since some designs may be limited in lower die positions.

In view of claims 8 and 9, Japan. Doc. '268 teaches that an assembly can be placed in a cavity with the die pad on the upper or lower side (Fig. 4 #b & #c).

In continued view of claim 12, Japan Doc. '268 discloses a heat sink adjacent to the support pins and resin, exclusively for heat dissipation.

In view of claims 14 and 22, Japan. Doc. '282 teaches a semiconductor package wherein a plurality of the support pins (Fig. 3 #10-12) are arranged substantially on the axis of the resin injection port.

In view of claim 18, Japan. Doc. '268 teaches that an assembly can be placed in a cavity with the die pad on the upper or lower side (Fig. 4 #b & #c).

In view of claim 27, where inserting pins is required, actuators or servomotors are notoriously well known as a means to move articles in an

effective means of which the examiner takes official notice, it is obvious that using an actuator or servomotor is notoriously known in the art for the placement of semiconductor pins in certain automated processes.

Allowable Subject Matter

Claims 11 and 24 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Applicant's Argument

Upon review of the prior art and the claims as amended, the claims do not overcome the prior art cited for the above noted reasons. The prior art does not teach direct connection with the lead frame, but transmits stress to the lead frame. Therefore, claimed limitations similar to that of figure 7 of applicant's specification would be looked at favorable where direct connection of the pins to the lead frame is shown.

Final Action

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP 706.07(a). Applicant is reminded of the extension of time policy as set forth in CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

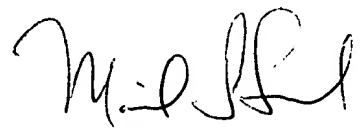
Any inquiry concerning this communication or earlier communications for the examiner should be directed to Granvill Lee whose telephone number is (703) 306-5865. The examiner can be normally reached on Monday thru Thursday from 7:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are not successful, the examiner's supervisor, Matthew Smith can be reached on (703) 308-1323. The fax phone number for this group is (703) 308-7722.

Any inquiry of a general nature relating to status or otherwise should be directed to the receptionist whose telephone number is 703-308-1782.

Examiner
Granvill Lee
Art Unit 2825

G1
10/22/02


MATTHEW SMITH
SUPERVISORY PATENT EXAMINER
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